

ENVIRONMENTAL ASSESSMENT TO PROVIDE ACCESSIBILITY TO THE LOGAN PASS VISITOR CENTER

Glacier National Park
Montana

U.S. Department of the Interior
National Park Service

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Summary: Glacier National Park seeks to ensure that visitors have equal access to the visitor center at Logan Pass. An accessible route was provided from the parking lot to the restroom level in 1987, and further improvements were made for parking and sidewalk access in 1995. However, the connection to the Logan Pass Visitor Center and upper terrace is limited to a stairway or two steep ramps. This precludes access by many visitors who have difficulty reaching the visitor center because of climbing stairs or traveling up steep ramps.

To fully consider the issues of improving accessibility to the Logan Pass Visitor Center, a project team of park employees and consultants formulated two alternatives to be considered. These include: *Alternative 1, retain the current access to the visitor center and the stairs between levels within the building (No Action); Alternative 2, construct an accessible walkway for pedestrians to the Logan Pass Visitor Center, and provide access within the facility between the two levels (the Proposed Action).* The consequences of these actions on natural, cultural and socioeconomic resources are discussed.

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1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Proposed Action

The purpose of this project is to provide visitors, including the very young, elderly and disabled, easier access to the Logan Pass Visitor Center than currently exists. The National Park Service proposes to improve accessibility to the entrance of the visitor center and upper terrace viewing area from the lower comfort station level. The proposal also includes provisions for travel between the two levels inside the visitor center, currently separated by stairs.

Objectives of the Project

- Provide equal access to ensure that all visitors can participate in programs, facilities, and services at the Logan Pass Visitor Center.
- Ensure that the design provides accessibility that is feasible, maintainable, and compatible with the current buildings and landscape.
- Ensure preservation of natural and cultural resource values is consistent with the means of accessibility to the visitor center and within the facility.

1.2 Need for the Project

The Logan Pass Visitor Center and comfort station were constructed between 1965-66 on a hillside above the parking lot, and open to the public in 1967. Public access to the visitor center from the comfort station level is a stairway, and two steep ramps at 12-27% grade. This precludes access by many visitors who have difficulty reaching the visitor center because of physical limitations. Although visitors can access the comfort station and lower terrace by an accessible pathway from the parking lot, the need exists to provide access to the Logan Pass Visitor Center, which is a primary use facility.

Park employees working at Logan Pass over the last ten years indicated that they receive requests for help from mobility impaired visitors who are unable to access the visitor center using the existing ramps and stairs. Some mobility-impaired visitors complain that they are unable to make a purchase in the Glacier Natural History Association book store, or view all the interpretive exhibits from within the visitor center (Murdock, 2000).

1.3 Decisions that must be made

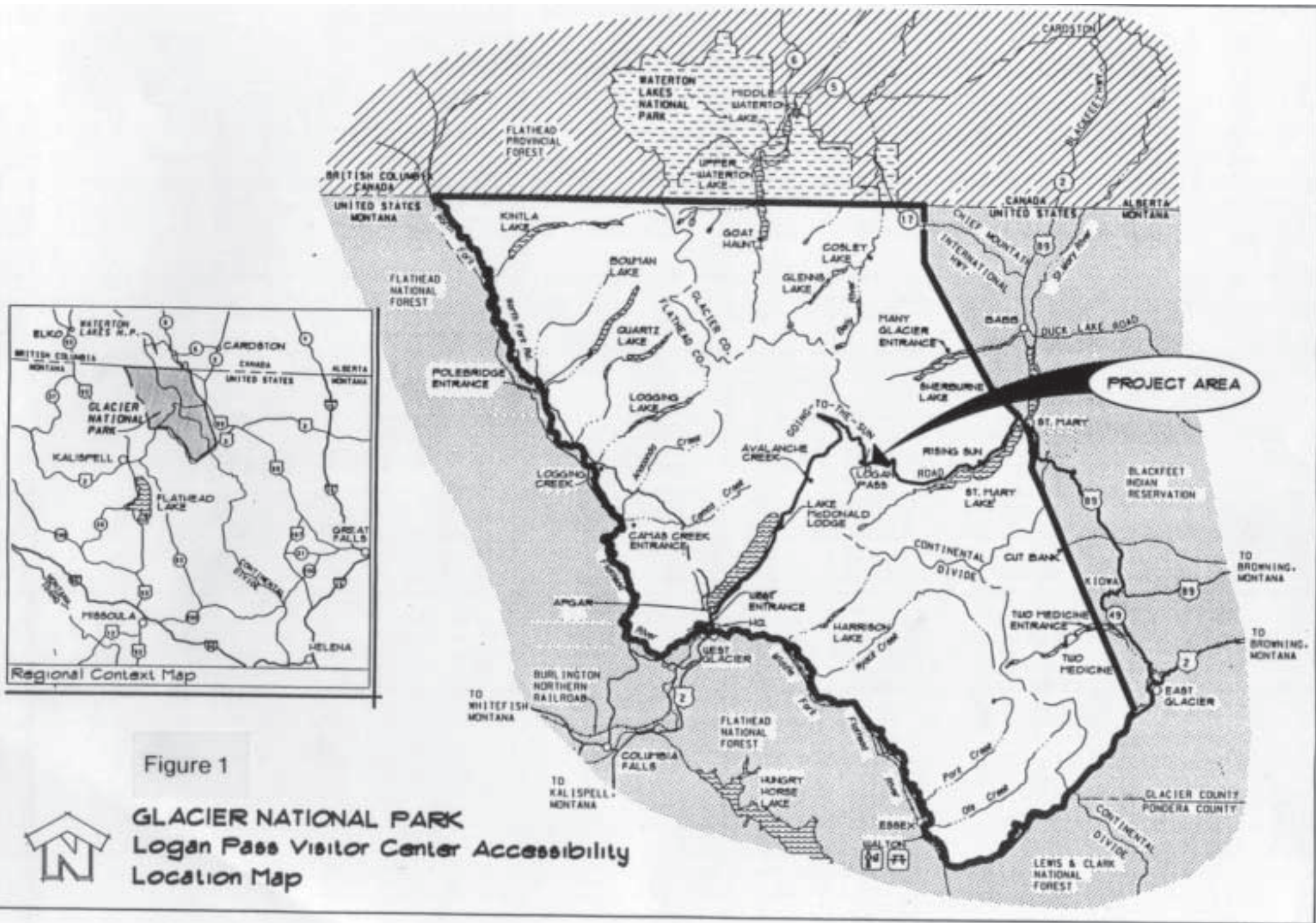
The National Park Service must decide:

1. Whether or not to construct an accessible route for pedestrians to the Logan Pass Visitor Center;
2. Whether or not to provide access within the Logan Pass Visitor Center between the two levels;
3. If there is an affirmed decision to proceed, what construction can be initiated this fiscal year, and when.

1.4 Scope of this Environmental Assessment

Background:

Glacier National Park is at the apex of three oceans (a triple divide) in northwestern Montana and encompasses 1,013,572.42 acres of breathtaking mountain scenery (Figure 1). Glacier's high country is accessible in the summer to visitors who drive the spectacular Going-to-the-Sun Road. The road winds 52 miles up and over the Continental Divide across Logan Pass (NPS, 1999).



Logan Pass lies on the Continental Divide at 6,646 feet elevation, in the center of Glacier National Park. The Going-to-the-Sun Road traverses the Pass, and was completed in 1933. The main attractions of the pass are the sub-alpine meadows, wildflower displays, and scenic vistas. The opportunity to drive to sub-alpine meadows and see fields of wildflowers and snow-banks in July and August is enjoyed by many of the visitors who enter the park.

During the Mission 66 era of the late 1950's and 60's the National Park Service made tremendous expansions of visitor facilities nation-wide under a plan of accommodating ever-increasing numbers of visitors. The current visitor center and parking lot were built in 1965-67 to replace a parking lot and stone outhouse. With construction of the modern visitor center, more attention was focused on Logan Pass. People stayed longer, increasing the peripheral foot traffic in the surrounding meadows. The visitor center contained numerous features including stairs, steep exterior walkways, narrow doors, and restrooms that did not provide for accessibility (NPS, 1984a).

In 1987 the National Park Service proposed to upgrade the comfort station and access to the Logan Pass Visitor Center. The project was assessed in the *Environmental Assessment for Reconstruction of Comfort Station and Accessible Ramp at Logan Pass, Package No. 243, 1985*. It was concluded that this action was a minor Federal action, having a minimum adverse effect on the natural environment of the park. The environmental assessment was made available for public review and comment during a 30-day period ending March 22, 1985. The Finding of No Significant Impact was signed 4/4/85 (NPS, 1985). The lower walkways connecting the parking lot to the comfort station were renovated and brought up to accessible standards. The comfort station was remodeled and enlarged to the south and east. In order to comply with Government Services Administration (GSA) accessibility standards, the ramp scheme changed the walkway approach from the parking lot, providing a 225-foot curving route to replace the previous 120-foot ramp. This presented a maximum 5% grade for access to the comfort station, compared to the previous 11% grade (NPS, 1985). **Although an accessible walkway to the upper level visitor center was included in the 1987 contract, it was not constructed due to a lack of funding.**

During a Federal Lands Highway Project at Logan Pass from 1995-1996, the visitor center parking lot was reconstructed with designated parking spaces for disabled persons, and providing an accessible route to the 5% walkway constructed in 1987. The elevation difference from the sidewalk adjacent to the parking area, to the upper terrace is approximately 20.5 feet.

The *General Management Plan and Environmental Impact Statement* for Glacier National Park provides for continued use of Logan Pass as a visitor destination. Included within the Logan Pass area is a visitor service zone with parking facilities, a visitor center, paved ramps and stairs, restroom facilities and a Glacier Natural History Association book store.

Issues Studied in Detail:

The Logan Pass Project Team identified a range of alternative actions to achieve the project objectives. This initial part of the planning process resulted in the identification of a number of relevant issues, concerns and opportunities to be addressed in the environmental assessment. A summary of these issues is discussed below.

Topography, Soils, Geology: Construction should limit the development as much as possible within the footprint of disturbance that has occurred since the visitor center was established in 1967. Soil is limited and shallow with parent material exposed in some places.

Vegetation: The vegetation within the sub alpine environment is fragile and not easy to heal. The growing season is short, 6-8 weeks, which occurs during the peak of visitation. . Plants are adapted to the harsh weather but not to trampling or compaction.

Wildlife: There are a number of species of wildlife that utilize habitats in or near the project area, including at least one federally listed threatened species.

Visual Resources: The type of access constructed should be compatible with the visual character of the Logan Pass developed area, and appropriate for the natural and structural setting. Construction materials should match the

existing stone masonry and concrete on the building and rock walls. Design and materials need to respond to maintenance and sustainability requirements including durability to withstand adverse weather conditions

Natural Soundscapes: The Logan Pass area should remain open to visitor use during construction activities, which may result in some conflicts with visitor use. Potential effects on visitors include disruption of natural sound from grading, and vehicle, equipment, and tool use.

Archeology: There is documented evidence in the use of the Logan Pass area by early American Indians, although investigations have not indicated presence of any known archeological resources within the project area.

Historic Structures: The visitor center may be eligible for listing on the National Register of Historic Places as a representation of what is called a Mission 66 building type. This architecture is indicative of what was built throughout the National Park Service from 1955-1966.

Park Visitation and Use: The entrance to the Logan Pass Visitor Center is not accessible for disabled persons because of steep stairs and ramps. Also, the interior of the Visitor Center has two levels, which are separated by two sets of stairs. This presents difficult access between the two levels for mobility impaired visitors. The Logan Pass area is one of the most popular visitor destinations at Glacier National Park, and there would be inevitable conflicts during construction of a new walkway and interior ramp. Safety for visitors and employees needs to be a primary consideration during construction. Consideration would need to be made in the design and scheduling of the proposed work to avoid conflicts with normal visitor use of the Logan Pass visitor center and surrounding area.

Economics: The Glacier Natural History Association currently uses the lower level within the visitor center as a location for sale of books and educational materials. The sales revenue is the highest of any site within Glacier National Park, which ultimately benefits from annual monetary donations to interpretive, educational, cultural, and scientific programs and projects.

Issues Eliminated from Detailed Study:

Air Quality/Odor

Air quality is not discussed in detail in this document because potential effects are expected to be minor. There would be a small increase in hydrocarbon emissions associated with equipment during construction. This would be a short-term effect and would not adversely affect long-term air quality in the Park. Particulate from dust would also be minimal and temporary because the ground disturbance is small. Emissions from construction equipment may produce temporary and minor odors detectable by visitors.

Water Resources, Wetlands, and Floodplains

Water resources are not affected by this project. The area is not in a floodplain or wetland. There is subsurface water that flows down the slope north of the visitor center, and under the sidewalk and parking area. The parking area has a drain that was installed during the 1995-96 parking rehab project.

Environmental Justice

The proposed action would not have health or environmental effects on minorities, low-income populations, or communities (EPA, 1999).

Energy Consumption

Construction equipment use would result in increased energy consumption during construction. There are no known cumulative impacts on energy consumption from alternative actions.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This section describes the alternative actions and summarizes the environmental consequences of the alternatives. Development of alternatives for providing accessibility to the Logan Pass Visitor Center involved the suggestions from the Logan Pass Project Team, review by the park staff, and direction from the management team.

2.1 Description of the Alternatives

The Glacier National Park management team identified two alternatives as reasonable for further evaluation as part of the Environmental Assessment, and are discussed below. The alternatives that were considered, but eliminated from detailed study for various reasons are also briefly discussed.

Alternative 1: Retain Current Access (No Action)

Under No Action, the National Park Service would neither improve nor restrict access to the Logan Pass Visitor Center. The current routes to the visitor center would be retained, as described below. (Please refer to Figure 2).

See Chapter III (Affected Environment) for a more detailed profile of the current environmental situation in the project area.

Current access means visitors would be able to access the comfort station and lower plaza level from the parking lot by a short pitch of stairs or an accessible walkway at 5% grade. However, the routes to the visitor center and upper terrace would remain as they were constructed in 1967, which requires walking up stairs, or a choice of two steep ramps. The covered stairway would remain that connects the comfort station and east entrance of the visitor center. Two ramps provide routes for visitors to the north entrance of the visitor center. Ramp #1 is 315 feet long at a 14% grade. Ramp #2 is 200 feet long at a 16%-27% grade. Neither of these routes meets current accessibility standards, and therefore present difficulties for mobility impaired visitors from accessing the visitor center. Handrails would be set up in early summer and removed in the fall, to aid visitors and contain foot traffic to the paved path surface. Chain and rod used for keeping visitors from leaving the path would continue.

The interior of the visitor center has two split-levels. Two sets of stairs within the visitor center would remain as constructed in 1967 as the means of travel between the two levels. The stairs are currently without provisions of access for all visitors between the two levels of the building, and do not meet accessibility standards. Therefore, mobility impaired visitors have difficulty with access between the two levels within the visitor center.

↖ Going-To-The Sun Road

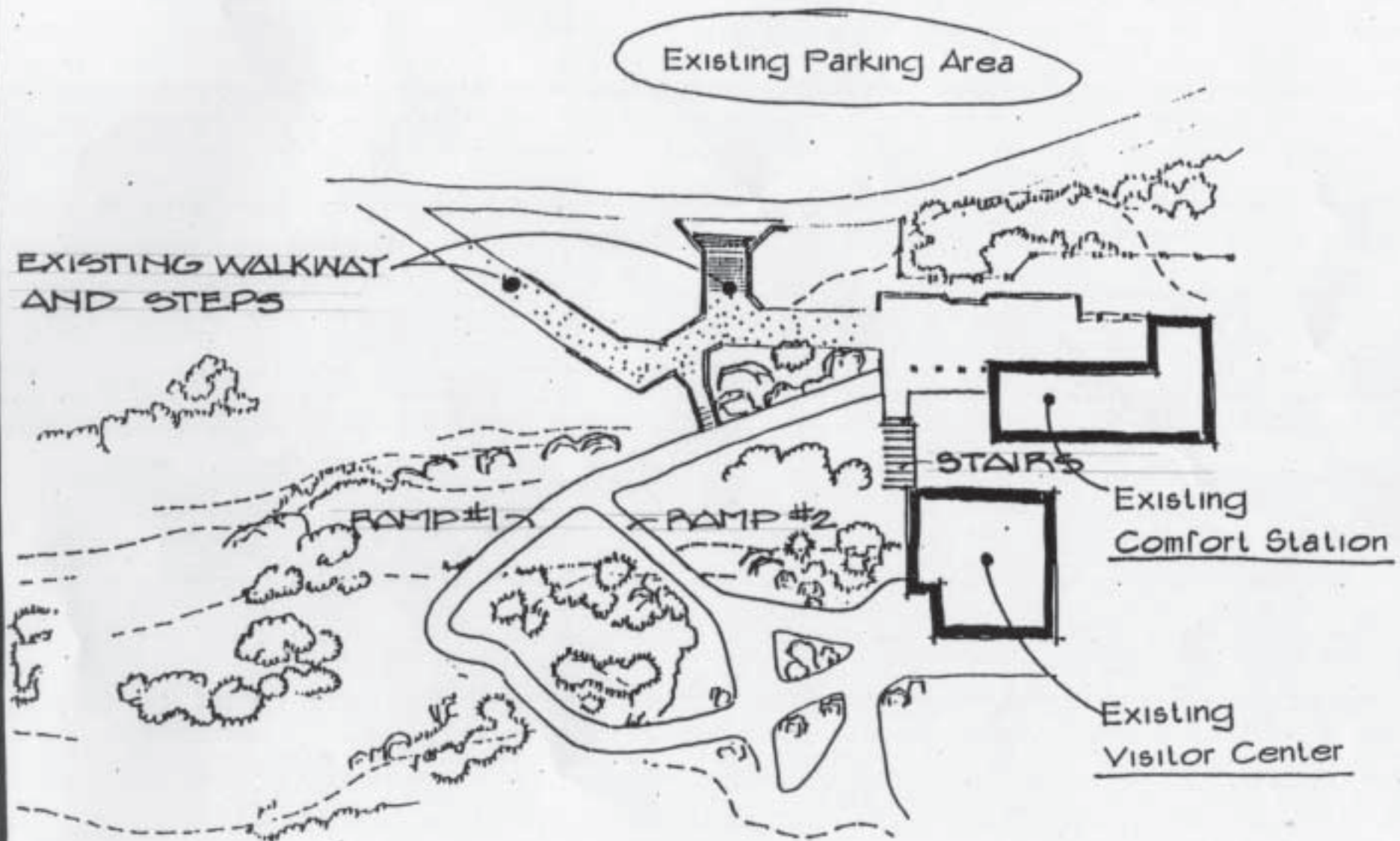


FIGURE 2
NO-ACTION ALTERNATIVE 1
LOGAN PASS VISITOR CENTER EXISTING CONDITION



Scale
1" = Approximately 40'

Alternative 2: Construct an Accessible Walkway for Pedestrians to the Logan Pass Visitor Center, and Provide Access within the Facility between the Two Levels (Proposed Action).

This alternative is to construct the walkway proposed in the 1985 construction project for accessible access from the comfort station to the upper terrace of the visitor center. This route would be constructed as a fully accessible route with a sustained running grade of 5% to 8.3% or less. Glacier National Park suggests this proposed action would provide needed visitor access, and in the long-term protect, preserve, and enhances historic, cultural and natural resources (Please refer to Figure 3).

The location of the proposed route would follow existing contours to the north of the visitor center, and would fit within the landscape with minimal physical disturbance. The route would begin at the comfort station level on the lower terrace at the intersection with the stone steps. It would then leave the existing ramp #1, and head northwest along a rock ledge, and between two bands of fir trees, partially screening it from the parking lot. At approximately 325 feet, the walk would turn back towards the Visitor Center. The switchback would also be designed to function as a passing, rest stop and viewpoint. The walkway would rejoin in with ramp #1 just below the crest of the hill, and follow the existing walkway and plaza to the Visitor Center entrance. The route would be approximately 600 feet long and six feet wide.

The proposed route would replace the existing 315-foot long 14 percent grade ramp #1 with a longer but fully accessible walkway. The existing ramp #1 would be removed and revegetated with native plants. Construction of the accessible walkway would require excavation and salvage of about 2000 square feet of soil and vegetation, plus 700 square feet of disturbance adjacent to the walkways. The soil would be salvaged, stored and replaced after construction. If soil import is necessary, it would consist of a blend of well-rotted sawdust, sphagnum peat, sand and loam soil that has been pasteurized to destroy any weed seed in any of the components.

The covered stairway would remain that connects the comfort station and the east entrance of the visitor center. Also, the existing steep 16%-27% ramp #2 would remain in place as a more direct route to the north side entrance of the visitor center for alternative pedestrian travel. There may be some modification to this ramp in order to intersect it with the new accessible walkway.

Restoration of native plants would require salvage of sod, seed collection, propagation of containerized and bare root plants, seeding, mulching, irrigation and maintenance. Seeds would be collected for propagation and direct seeding from the Logan Pass area. It would take three years to propagate plant material at the native plant nursery and greenhouses.

Within the inside of the visitor center, a ramp of 5%-8.3% would be constructed providing access between floor levels within the facility. This would enable people to move between the upper level of interpretive displays and the lower level viewing and bookstore area. The ramp would occupy from approximately 160 square feet to 96 square feet, depending on the grade at which the ramp was constructed. Modifications to the interior of the visitor center would be confined to the fall shoulder season after the visitor center is closed. The visitor center would remain open during the main part of the summer season.

Architectural Accessibility means the design, construction and/or alteration of a building or facility is in compliance with officially sanctioned design standards, and that can be entered, and used by individuals with a disability. Because of the creation of the official design standards for accessibility, this term carries a legal definition. Buildings or facilities that are not in compliance with official standards are not considered to be *accessible*. The term is used in concert with the concept of *program accessibility* (NPS, 1999a).

↖ Going-To-The Sun Road

Existing Parking Area

EXISTING WALKWAY
AND STEPS

STAIRS

Existing
Comfort Station

Existing
Visitor Center

Proposed Accessible Trail

FIGURE 3
PROPOSED ACTION-ALTERNATIVE 2
LOGAN PASS VISITOR CENTER-ACCESSIBLE TRAIL



Scale
1" = Approximately 40'

2.2 Comparison of Alternatives

Resource	Alternative 1 Retain Current Access (No Action)	Alternative 2 Construct Accessible Walkways (Proposed Action)
Total New Disturbed Area	Negligible disturbed area.	2700 square feet of disturbance
Topography, Soils and Geology	Negligible effect to land.	Long-term, moderate loss of soil productivity for the portion of the new walkway that is on meadow vegetation. Soil would be salvaged and used in revegetation. Erosion control practices would limit soil loss.
Vegetation	Negligible effect to vegetation.	Long-term, moderate loss of 2000 square feet and short-term minor loss of 700 square feet of sub-alpine plant community within the developed zone. Revegetation would include salvaged plant material and native plants grown from collected seed; 540 sq ft of native vegetation restored from old ramp removed.
Wildlife	Negligible effect on wildlife.	Minor, temporary effect on small mammals by displacing some, but possibly expanding area used by ground squirrels. Impacts to other wildlife are negligible.
Threatened, Endangered, and Rare Species of Special Concern	Negligible impacts to wildlife species of special concern.	Construction impacts and loss of habitat would be negligible for grizzly bears. Potential risk for bear-human encounters negligible.
Visual Resources	Negligible effect to visual resources.	Short-term, minor visual impacts of construction. Long-term visual impact would be minimal increase to develop area, but compatible. The walkway would result in 300 feet of constructed feature around the visitor center. Design would blend in walkway to landscape
Natural Soundscapes	Negligible effect to natural soundscape. .	Temporary, moderate increase in noise levels during construction may displace wildlife temporarily, and annoy visitors near the visitor center. Noise from use of the walkway after construction would be negligible increase to existing noise levels.
Archeology	Negligible effect on archeological and ethnographic resources.	No archeological or ethnographic resources were found during surveys of the site, and thus negligible effect from the proposal.

Historic Structures	Negligible effect on historic structures or cultural resources.	Accessible ramp constructed within the visitor center would have negligible effect on the character of the structure, as an example of Mission 66 architecture. Exterior walkway would have negligible effect on potential cultural landscape.
Park Visitation and Use	Negligible effect on the current means of access to the Logan Pass Visitor Center, and the upper terrace and trailheads. Continuation of a major impact to mobility impaired visitors, deprived of independent access to the visitor center and upper terrace views. Moderate safety concerns would remain as disabled people try to access the visitor center on steep ramps and stairs.	Temporary, moderate effect on the quality of visitor experience for portions of two seasons. Temporary, moderate safety concerns from congestion of visitors and construction. Additional staffing may be needed. Moderate reduction to the floor space within the visitor center from 4.8% to 8%. Construction schedules would attempt to minimize disruption to visitors. Major benefit for mobility impaired visitors that would enable them to enjoy the visitor center information, programs, and displays, and access walkways within the subalpine meadows.
Economics	May have minor effect on bookstore gross sales from mobility impaired visitors that would continue to have difficulty with access to the Glacier Natural History Association bookstore, or would require assistance to make purchases.	Difficult to predict how a moderate reduction of bookstore retail space would effect gross sales and the donations to the Park. Advance notice of construction, and late season scheduling would lessen impact. Mobility impaired visitors would have access to the purchase of educational materials.
Total Capital Cost in Fiscal 2000 Dollars	No additional capital cost	\$165,000

2.3 Alternatives Considered but Eliminated from Study

Access Route between Existing Restroom Terrace and Visitor Center

Elevator, Platform or Chair Powerlift:

Any powered lift system would require a sizable power source. The lack of electrical power onsite makes a powered lift adjacent to the existing visitor center stairs extremely complex and costly. The mechanics of the lift and the ability to keep operational at a remote location, as well as developing a dependable source of power were considerations contributing to dismissal of this alternative. Other issues supporting dismissal were presented from the user-group included in planning discussions and included: concerns for safety, on-call assistance, loading and unloading awkwardness.

Assisted Access:

Designating an employee to aid visitors was considered, such as pushing wheelchairs up the existing ramps, or assisting mobility impaired pedestrians. This was judged to be impractical and did not resolve the real problem, which is the steepness of the ramps. This would not comply with National Park Service policy of providing equal access to a primary use facility for all visitors.

Access on the West Side of the Visitor Center:

A southeast path was considered that would begin at the lower terrace opposite the restrooms, loop around behind the visitor center, and access the upper terrace from the southside. This was eliminated because of the excessive length of pathway construction that would be needed to attain acceptable grades and achieve elevation gain up onto the upper meadow area. Also, the route would enter an area of known grizzly bear diggings and frequent activity by the threatened species. Also, the lower portion of the trail would be highly visible against the rock outcrop, and the upper section visible from the Hidden Lake trail.

Exterior Ramp constructed at and above 8.3% grade:

Design for construction of a ramp at 8.3% and steeper was considered in order to reduce the linear footprint on the landscape of a walkway at a lesser grade. This ramp would have incorporated landings, handrails and other accessibility features as defined in current accessibility standards. The location that was considered would follow the lower portion of the walkway defined in Alternative 2 for approximately 100 feet. At this point it would switchback towards the visitor center to join ramp #1 at the same point noted in Alternative 2. Since the Visitor Center is a primary facility within a developed area, accessibility should be at the easiest level (NPS, 1999a). Therefore, this alternative was eliminated because we would not consider a route greater than 8.3%.

In addition, this alternative was eliminated because the ramp would not fit into the landscape between the restrooms and the visitor center without extensive cuts and fills, resulting in visual impacts that would be difficult to rehabilitate. Furthermore, this alternative to construct a ramp system versus an accessible walkway would provide a more difficult and less safe means of accessing the visitor center than the proposed action alternative. Although this alternative would reduce the amount of new construction by approximately 300 linear feet, cuts approaching 5 feet in depth by approximately 100 feet long would be required because of the terrain. In order to comply with the accessibility standard, the 8.3% grade would not be sustained for more than 30-foot lengths without a landing. Handrails on both sides would be required throughout the ramp's length, which were cost and visual concerns.

Access Route between Existing Split-Levels within the Visitor Center

Split level entrance:

A split-level exterior entrance that would provide access to both levels of the visitor center at the upper terrace was eliminated. This would require extensive exterior grading and sitework including retaining walls to support a landing and accessible access-way to the landing. In addition, demolition to the exterior masonry walls of the visitor center would be necessary to install new doors. There were concerns that this would result in significant modification to the

structure of the visitor center, and may conflict with historic integrity of the building. Circulation within the center would be further congested at a point where the existing two entries already merge.

Hydraulic lift within the visitor center:

A hydraulic platform lift was considered for accessibility between the two split-levels within the visitor center. A small lift between the floors would commit 25 square feet for the lift itself, 25 square feet of landing space at either ends, plus additional square footage for mechanical support equipment – a commitment of space for a limited number of users. Again, as with the exterior lift alternative, the lack of electrical power onsite makes a powered lift a complex and costly solution. Maintenance of a mechanical device at a remote location, developing a dependable source of power, providing staff support for operation and assistance, as well as user concerns for safety, loading and unloading embarrassments were all considerations contributing to dismissal of this alternative.

Ramps constructed at both stairway locations within the visitor center.

This was eliminated because two ramps within the visitor center would commit an excessive square footage and contribute to additional congestion at the north stairway area. There were also concerns that this construction would have significant effect on the historic integrity of the building.

3.0 AFFECTED ENVIRONMENT

This chapter presents relevant resource components of the existing environment at Logan Pass. Natural, cultural and socioeconomic resources are described that would be affected by alternatives, and that would affect alternatives if they were implemented. The environment described is the baseline for comparisons.

3.1 Natural Resources

Topography, Soils and Geology

The decomposed limestone soils at Logan Pass are shallow and poorly developed. Soil formation is extremely slow due to the cool climate and short growing season. Topsoil is only inches deep at best, and is immediately confined to the sod and root systems of plants (NPS, 1985). The soil in the area of the Logan Pass Visitor Center is dominated by a loamy alpine meadow limestone soil. Also included is shallow glacial till 3 to 10 feet deep over bedrock. Bedrock is primarily Siyeh Limestone and volcanic rock (Basko, 1996).

The soils are classified as loamy-skeletal, mixed Typic Cryochrept. The dominant soil is described as friable, brown gravelly silt loam containing wind blown volcanic ash with moderate water holding capacity, and moderate erosion and sloughing potential. Limestone residuum and colluvium with loam textures and increasing rock content with depth dominate the parent material. Rocks are angular quartzite and argillite (Dutton, 1997). Generally the soil is considered well drained and available water holding capacity is moderate to low depending upon the rock content. Mean annual precipitation is 80 - 100 inches (Basko, 1996).

The surface soil often has a turf character caused by dense roots in the upper 2-6 inches. These limestone soils generally have vegetation, which reflects slightly drier conditions than on adjacent quartzite and argillite soils. Vegetation in this unit is dominated by the colder climate species. Both stunted, wind-form conifer forest in the alpine fir series and seral communities dominated by shrubs, grasses and forbs are present (Dutton, 1997). There are no prime and unique farmlands in the Logan Pass area.

Vegetation

The project area is located in the subalpine zone of the park in a mix of vegetation community types. The vegetation at Logan Pass and adjacent to the visitor center is the treeline interface between patches of stunted subalpine firtrees merging into alpine flower meadows. Pockets of krummholz forest are located on the site dominated by subalpine fir (*Abies lasiocarpa*) with beargrass (*Xerophyllum tenax*) in the understory. The meadow vegetation produces a floral display that is one of the attractions of the pass from early July when snowmelt begins exposing the ground, through August. The growing seasons is only about 6-8 weeks long due to the late snowmelt and early fall frosts. A sub-

alpine fir tree only three feet tall and 2 1/2 inches in diameter at ground level is believed to be 50 to 75 years old. Most of the plants found at this elevation are highly specialized for survival in the alpine life zone, and if not unique to the alpine zone, are ecotypically different from closely related plants at lower elevations. This creates a problem for obtaining seed for revegetation work.

The predominant herbaceous community in the project area is the dry meadow type characterized by glacier lily (*Erythronium grandiflorum*), smooth woodrush (*Luzula hitchcockii*), and wandering daisy (*Erigeron peregrinus*). Where water accumulates in depressions on portions of rock ledges, species that prefer more moisture are found, such as rock willow (*Salix vestita*), heath (*Phyllodoce empetriformis*), and monkeyflower (*Mimulus lewisii*). A wide variety of forbs and grasses are located within the project area. No rare, sensitive, threatened, or endangered plants were found in a survey of the project area. Prior inventories of vegetation within the Logan Pass area, including the project area, were also available for reference from previous research and construction projects.

Refer to Appendix A for a Plant Species List.

Wildlife

The Logan Pass area provides habitat for a variety of wildlife species. Information on wildlife use of the area is largely anecdotal or based on limited surveys. There has been no intensive wildlife inventory of the area; for example, no small mammal trapping or bat surveys have been conducted. However, use by large mammals and birds are fairly well documented.

Wildlife found in the Logan Pass area includes small mammals, large herbivores, carnivores, perching birds and ptarmigan, and raptors. Columbian ground squirrels (*Spermophilus columbianus*) are common in the Logan Pass area and known to live within the project area; golden-mantled ground squirrels (*Spermophilus lateralis*), chipmunks (*Eutamias minimus*), voles (*Phenacomys intermedius*, *Arvicola richardsoni*), and shrews (*Sorex vagrans*) may also be found in the project area. Hoary marmots (*Marmota caligata*) live in adjacent habitats and may occasionally use the project area. Mountain goats (*Oreamnos americanus*) can be seen on the high slopes visible from the visitor center, and may travel through the project area to reach alternate foraging sites or to access the parking lot where spilled antifreeze provides an attractant. Mule deer (*Odocoileus hemionus*) are also attracted to antifreeze in the parking lot. Occasionally bighorn sheep (*Ovis canadensis*) are seen in meadows above the visitor center, and may also pass through the project area.

Wolverine (*Gulo gulo*) and the threatened grizzly bear (*Ursus arctos horribilis*), both wide-ranging species, utilize the Logan Pass area for foraging and travel. Grizzly bears dig for glacier lily bulbs, as well as marmots and ground squirrels, in the meadows surrounding the visitor center, especially along Reynolds Creek to the south. Ground disturbance suggests that grizzlies occasionally forage close to the visitor center, and they have been seen near the building, usually when visitor use is low (early mornings or late evenings). The trail from the visitor center to Hidden Lake overlook is periodically closed to public use due to grizzlies frequenting the Logan Pass area.

Other mammals, including the mountain lion (*Felis concolor*), coyote (*Canis latrans*), weasels, and possibly lynx (*Lynx canadensis*), wolf (*Canis lupus*), marten (*Martes americana*), fisher (*Martes pennati*), and elk (*Cervus elaphus*) may also utilize the general Logan Pass area. A family of weasels has been reported in the project area (NPS 1985) and more recently along the boardwalk above the visitor center (GNP wildlife database).

Among a variety of birds found in the area are typical subalpine species like the fox sparrow (*Passerella iliaca*) and white-crowned sparrow (*Zonotrichia leucophrys*). White-tailed ptarmigan (*Lagopus leucurus*) inhabit the Logan Pass area and may occasionally forage in or travel through the project area. A variety of raptors migrate over Logan Pass during the spring and fall; among these migrants may be an occasional peregrine falcon (*Falco peregrinus*). Golden eagles (*Aquila chrysaetos*) may nest and forage in the Logan Pass area.

Refer to Appendix B for a Wildlife Species List.

Visual Resources

Logan Pass sits atop the continental divide and near the center of the park. Scenic views from the pass area are spectacular; including glacier carved peaks and valleys, the famous Garden Wall, and wild flower strewn alpine meadows. The distant mountain panorama and sub alpine meadows are the predominant view-shed. The visitor center blends in with the surrounding landscape because of the building color, design, and materials used in construction. Lights are not present at the pass, and at night the facilities cannot be seen from a distance.

The visitor center facility is more or less perched on a natural shelf above the parking lot. Visitors accessing the facility from this parking lot currently utilize the stairs or ramps, and in so doing pass by native vegetation and rock outcrops. The slope below the visitor center is often in full bloom with alpine wildflowers offering close inspection by passing visitors. This is perhaps many visitors first encounter since entering the park to experience the alpine meadow vegetation at such a close proximity.

Natural Soundscapes

Natural soundscapes predominate through most of the park. Developed areas such as Logan Pass can be relatively noisy for the park visitor from 10am to 4pm during the peak season of visitor use from mid June through September. Noise levels in the park will vary depending on time, wind direction, and location (Harris, Miller, Miller and Hanson, 1998) Sources of noise at Logan Pass include scenic air tours (primarily helicopters), road traffic, emergency vehicle sirens, and sounds associated with visitors (people talking, vehicular noise etc.)

3.2 Cultural Resources

Archeology

Native Americans used Logan Pass and other passes when travelling over the mountains. The Kootenai name for the pass is “Packs-Pulled-Up”. Although some archeological resources have been found in the vicinity of the pass, intensive archeological surface surveys conducted in 1994 have failed to find resources in the area of the visitor center or its access path system.

Historic Structures

The National Park Service has declared a moratorium on major changes to Mission 66 buildings while their eligibility for listing on the National Register of Historic Places is considered. The Logan Pass Visitor Center is considered by the National Park Service to possibly be eligible for listing on the National Register of Historic Places as an example of a “Mission 66” visitor center building type. The issue of accessibility to the visitor center building is being considered through consultation with the National Park Service Mission 66 Panel. The building and exterior walks utilize a unique type of formed rock rubble masonry. The effort to emulate this masonry style in the 1987 contract proved difficult and ultimately required expert assistance from an NPS preservation center. The interior of the upper level of the Logan Pass Visitor Center contains two sets of four steps each, which provide access to the two floor levels within the structure.

When the Logan Pass Visitor Center was opened to the public in 1967, a system of footpaths was in place to give visitors access from the parking lot to the lower and upper levels of the building. This slope is a disturbed area, which has had at least two major path redesigns and re-routings. It has been successfully revegetated. The present trails to the lower and upper parts of the Logan Pass Visitor Center date from the 1980s and are compatible with, but do not contribute to the potential eligibility of the building for listing on the National Register of Historic Places. There were no ethnographic resources located during archeological surveys conducted in 1994.

The Going-to-the-Sun Road, a National Historic Landmark, provides vehicular access to Logan Pass, but is outside the area of potential effect of the project under consideration. A parking lot was constructed at Logan Pass as part of the completion of the Road in 1933. The present parking lot occupies the same area and was expanded and paved in

the 1960's. It has been redesigned and rebuilt several times since then. The parking lot and sidewalks are outside the area of potential effect of this project.

3.3 Socioeconomic Resources

Park Visitation and Use

Glacier National Park is an important regional, national and international recreation destination. In recent years Park visitor numbers have ranged from 1.7 million to 2.1 million and it is estimated that approximately 66 percent stop at Logan Pass (Peccia and Associates, 1997). Demand for access to Logan Pass exceeds the space available, and parking is a primary constraint on visitor use.

Logan Pass provides the visitor with spectacular views of the park's mountain scenery and wilderness. Trails beginning at Logan Pass include the popular Highline route and the boardwalk across alpine meadows to the Hidden Lake Overlook. The Logan Pass Visitor Center is an important facility where visitors seek to understand and appreciate the natural and cultural resources of the area. This opportunity is especially true for mobility-impaired visitors who are not able to travel on trails.

Approximately 3.5 percent of the American public require some type of mobility device - Crutches, Wheelchairs, Canes, Walkers, Scooters, etc (US Census, 1995). Assuming such figures are representative of the visiting public at Logan Pass, then (roughly) between 30,000 and 50,000 mobility impaired visitors stop at the pass on an annual basis. These numbers are likely to double when one takes into account individuals with temporary disabilities, the aging and infirm, children in strollers, etc. (Gary Robb, personal communication). Employees of the Summit Independent Living Center in Kalispell were consulted regarding the methods of providing accessibility during a site visit at Logan Pass 10/18/98.

Economics

The lower (floor) level of the Logan Pass Visitor Center is currently available to Glacier Natural History Association for the sale of interpretive materials and products that have been approved by the National Park Service. Based upon the current agreement between the National Park Service and the Glacier Natural History Association, the lower level is the space allotted to retail bookstore operations. It is an area that is reached by two different stairways (GNHA, 1999; NPS, 1999b).

The Glacier Natural History Association is a nonprofit cooperating association of the National Park Service that was incorporated in 1946 and has maintained a long-standing partnership to enhance the educational opportunities of visitors to Glacier National Park. The Glacier Natural History Association's primary source of income is derived from sales in park visitor center bookstores and ranger stations; and the Logan Pass Visitor Center has been the predominant outlet for several years (GNHA, 1999).

The Glacier Natural History Association annually returns several thousand dollars in donated "aid to the National Park Service" based on a percentage of those gross sales. In recent years, the Association has returned 13% of gross sales to Glacier National Park to make possible a variety of interpretive and educational projects and programs that relate to visitor educational opportunities. In-kind and financial support has benefited several substantive cultural and scientific research programs over the years, as well. Since 1946, the Glacier Natural History Association has provided over \$1.5 million in financial and in-kind support (GNHA, 1999).

In fiscal year 1999, the Glacier Natural History Association gross sales at Logan Pass from opening day June 21, 1999 to September 30, 1999 were \$458,712. That accounts for 45% of the total gross sales from all locations within the park combined, which were \$1,036,593. On any given year, the bookstore sales at Logan Pass significantly affect the overall financial health of the Glacier Natural History Association (GNHA, 1999).

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter is organized by resources, and is the scientific and analytic basis for the comparisons of alternatives. The effects of each alternative are assessed for selected natural, cultural and socioeconomic resources. Impacts are described in terms of context (are the effects site-specific, local, or even regional?), duration (short- or long-term?) and intensity (negligible, minor, moderate, or major?). The thresholds of change for the intensity of an impact are defined as follows:

Negligible-the impact is at the lowest levels of detection

Minor-the impact is slight, but detectable

Moderate-the impact is readily apparent

Major-the impact is a severe or adverse impact or of exceptional benefit

4.1 Natural Resources

Topography, Soils and Geology

Alternative 1- Retain Current Access (No Action)

There would be negligible environmental impacts on soils from this alternative because the current management would be maintained. There would be no construction and therefore no major new impact on the meadows. Visitor foot traffic would continue on the ramps and walkways, with a continued need to channelize traffic onto the hardened walks.

Alternative 2 - Construct Accessible Walkways (Proposed Action)

Construction of the accessible route would require moderate excavation and salvage of about 2000 square feet of soil and vegetation, plus minor adjacent impacts of 700 square feet by construction. Storage space would be needed for soil and plant material, but this could not occur on native vegetation. There would be long-term loss of soil productivity for the portion of the proposed accessible route that is on meadow vegetation because this area would be covered by an asphalt walkway. Where the route is over bedrock, excavation would be difficult in order to achieve grade specifications. This would require hand and machine, but no explosives would be used. Additional minor soil disturbance to the sides of the route would temporarily affect soil resources during construction, but would have no long-term effect.

Excavation of approximately 540 square feet of existing asphalt ramp would restore this previous pathway to native vegetation. The asphalt would be hauled from the site and not stored on soil or vegetation. This process of asphalt ramp removal could have minor disturbance to soil within two feet of the existing ramps, but a major benefit in replacing portions of ramp #1 with soil. Alternative pathways would be maintained in order to provide access to the visitor center and upper terrace during construction.

Planned use of erosion and sediment control best management practices would minimize the potential for soil loss. In order to prevent introduction of exotic species, imported soil and fill material would be selected from a list of inspected and approved sources, provided by the procurement officer. Limited space would be available for the temporary storage of soil off the south end of the parking lot that would not interfere with parking.

Cumulative Effects:

Minor cumulative effects to soil resources would be expected from the Alternative 2 Proposed Action because the project is within the developed zone around the visitor center site that has had prior disturbance since 1967. However, soil productivity was maintained on sites disturbed by construction in 1967, 1987, and 1995 within the project area. There are no additional projects planned in the Logan Pass area that would result in loss of soil. There would be negligible cumulative effect from Alternative 1 No Action.

Vegetation

Alternative 1 – Retain Current Access (No-Action)

There would be negligible impacts to vegetation under the no-action alternative. The social trail to Oberlin and Clements would continue to be used when the area is not closed for resource protection.

Alternative 2 - Construct Accessible Walkways (Proposed Action)

There would be long-term, moderate loss of native vegetation to 2000 square feet of meadow from the grading of the proposed accessible walkway, and short term, minor impact to 700 square feet of vegetation adjacent to the portions of the old ramp removed. The area of disturbance would be confined to the width of the walkway. A minor amount of plant material would be removed from the route along the rocky ridge. A few small trees may need to be removed near the western bend in the trail, although minimal disturbance of existing krummholz is expected. Management actions would be needed to discourage social trailing in the vicinity of the removed trails. Mortality of plants would increase if sod is handled roughly or piled on it. Salvaged plant material would require a storage area equal to the size of area from which it was salvaged. Restoration work is expensive and labor intensive in the Logan Pass area due to the short growing season, poorly developed soils, harsh weather and necessity to collect and propagate seed sources for native plants adapted to an alpine environment. .

Replacement of the salvaged soil the same year would result in long-term establishment of vegetation, and sustain the vigor of soil microorganisms. Native vegetation would be restored in the long term to 540 square feet of area excavated in old ramp removal, and to 700 square feet of area adjacent to the new walkway. Within five years following construction, a vegetation cover of native plants would be established that blends in with the adjacent plant communities, is ecologically compatible with those communities, and is consistent with functional maintenance and safety requirements (Lange and Lapp, 1997; Filipiak, 1987; Asebrook et al, 1997a). The expense of salvaging, tending, and replanting sod would be cost effective because replanted sod or sod plugs contribute to ground cover and long term survival of plant material. Design of the accessible route would minimize physical and visual impact to undisturbed meadow. Portions of the walkway would be constructed from 5 % to 8.3 % grade (not to exceed 30ft, followed by a ramp), in order to avoid cuts and fills and minimize disturbance

Cumulative Effects

Minor cumulative effect to vegetation would occur from construction of the walkway in the Alternative 2 Proposed Action because the construction is in an area of prior disturbance within the developed zone around the Logan Pass Visitor Center. Past actions to construct the visitor center, comfort station, ramps, access routes, boardwalk, and parking lot have all contributed to the condition of the existing vegetation communities in the area. There are no other known planned disturbances in the vicinity of the project area that would impact vegetation. Within the areas of past disturbance, revegetation projects were implemented to restore native plant communities, and aesthetic values. There would be negligible cumulative effect from Alternative 1 No Action.

Wildlife

Alternative 1 – Retain Current Access (No Action)

Negligible impacts to wildlife would occur.

Alternative 2 -Construct Accessible Walkways (Proposed Action)

The pathway construction for the accessible route may temporarily or even permanently displace a few ground squirrels and other small mammals from a portion of their home ranges. However, this would be a minor effect due to the limited area impacted and the high numbers of ground squirrels in the area. Long-term effects may include increased numbers of ground squirrels if the expansion of visitor use into new areas results in more food handouts and thus more food-conditioned animals.

In the 1985 Environmental Assessment, the authors predicted that a weasel den might be impacted by ramp construction. The exact location of the den has not been determined because weasels use a variety of burrows throughout the area dug by Columbian Ground Squirrels. The burrows are interconnected, and weasels can go into any number of the holes. Weasels were observed by surveyors within the project on 11/3/99 (Ries, 1999). If weasels forage or den in the area during construction, they would probably be temporarily displaced by construction activity, though they should be able to adjust to this relatively minor loss of habitat.

Impacts to other wildlife would be negligible. A few songbirds may be displaced from foraging or nesting sites and larger mammals like mountain goats would lose only small amounts of habitat. The normal heavy visitor use in the area already displaces larger animals from habitat within the project area, although some wildlife may utilize the area

during periods of low visitor use or become habituated to human activity. Peregrine falcons fly over the Logan Pass area during migration and, while they may periodically forage enroute to their destinations, they are unlikely to be affected by this project.

Regarding threatened and endangered and State Sensitive Species, construction impacts and loss of habitat would be negligible for grizzly bears since grizzlies are discouraged from frequenting visitor use areas, and loss of foraging habitat would be negligible. Inviting visitors into a previously undeveloped area may potentially increase the availability of human food items to bears that might traverse or forage in the area at night, and thus increase the risk of human-bear conflicts. However, the small area affected would likely make this increased risk negligible.

Grizzly bears may wander by due to their highly mobile nature, but negligible impact on the species from construction is expected. Grizzly bears would continue to wander through the area, causing temporary visitor use closures of the trails and potential short term containment of foot traffic around the visitor center. These actions have been brief in the past, although if a grizzly prolonged its stay around the visitor center there would be potential for hazing or aversive conditioning to teach the bear to avoid people. This involves no change from current management, and the procedures are outlined in the park Bear Management Plan.

Cumulative Effects

Expanding the impacted area at Logan Pass under Alternative 2 Proposed Action would have negligible cumulative effect to wildlife because of the relatively small additional area affected. There would also be negligible effect from the Alternative 1 No Action Alternative.

Visual Resources

Alternative 1 – Retain Current Access (No Action)

There would be negligible change in existing visual quality of the landscape under the no action alternative.

Alternative 2 - Construct Accessible Walkways (Proposed Action)

There would be short-term, minor visual impacts of construction activity from the Going-to-the-Sun Road, parking lot, and the Hidden Lake trail. The accessible walkway would result in an additional 300 feet of constructed feature within the landscape around the visitor center. However, the design of the route would utilize terrain features to blend in with the landscape. The choice of construction materials and methods would also blend in with existing structures and facilities. The long term visual impact would be minimal and would consist of a slightly larger, but compatible, developed area.

Cumulative Effects

There would be minor, cumulative effect from the Alternative 2 Proposed Action because modifications to the landscape result in some long-term change to the visual quality of the land. There has been gradual change to the Logan Pass area since 1933 in order to provide for increasing visitor use demands and to protect resources. There are no known future activities that would add to the cumulative effects of the proposal. There would be negligible cumulative effect from the Alternative 1 No Action.

Natural Soundscape

Alternative 1 – Retain Current Access (No Action)

There would be negligible change in existing noise levels.

Alternative 2 – Construct Accessible Walkways (Proposed Action)

There would be temporary, moderate increase in noise levels during construction that may be an annoyance to visitors. Portions of the proposed route are over rock that may need to be removed by machinery. Noise levels within the immediate vicinity of the visitor center during construction may temporarily be detected by and displace wildlife for brief periods. Noise associated with use of the accessible route following construction would be similar to the existing noise level under current visitor use levels.

Cumulative Effects

Noise from each of the alternatives would have negligible cumulative effect to the ambient noise levels. Reconstruction of portions of the Logan Pass boardwalk would require four to eight hours of helicopter time during portions of one or two days in late August. No other construction projects are anticipated in the Logan Pass area that would affect the natural soundscape during the period that the proposed new accessibility route would be constructed.

4.2 Cultural Resources

Archeology

Alternative 1 - Retain Current Access (No Action)

This alternative would have negligible effect on archeological or ethnographic resources.

Alternative 2 - Construct Accessible Walkways (Proposed Action)

This alternative would have negligible effect to archeological or ethnographic resources. There are no known archeological resources present associated with American Indians, settlement, or development of the Park. The area of the proposed paths was intensively surveyed for archeological resources in 1994, and none were found. There are no known ethnographic sites in the project area. Copies of the environmental assessment would be forwarded to each of the American Indian tribes traditionally affiliated with Glacier National Park, for their review and comment. If the tribes subsequently identify the presence of ethnographic resources, appropriate mitigation measures would be undertaken in consultation with the tribes. The location of ethnographic sites would not be made public. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed.

Cumulative Effects

There would be negligible cumulative effects to cultural resources from walkway construction under the Alternative 2 Proposed Action, or Alternative 1 No Action since there were no archeological or ethnographic resources found within the project area.

Historic Structures

Alternative 1 - Retain Current Access (No Action)

This alternative would have negligible effect on historic structures or cultural resources.

Alternative 2 - Construct Accessible Walkways (Proposed Action)

Glacier National Park consulted with the Intermountain Region Mission 66 Panel, regarding the actions proposed to the Logan Pass Visitor Center under this preferred alternative. According to the panel chairperson, the parks proposed installation of a ramp in place of one set of stairs in the upper section of the visitor center is appropriate, whether the ramp is removable or built-in. Although the ramp would have a minor effect on the interior, it would have a negligible effect on the character of the structure as a whole because the stairs are not a character-defining feature of the structure. For the purposes of considering the effects of this alternative on historic properties in and around the Logan Pass Visitor Center, the review panel's consultation and advice would suffice. The proposed action would have negligible effect to the potentially significant cultural landscape. The panel would be interested in reviewing final design drawings consultatively prior to the start of the project. The expected approval and publication of registration requirements this summer for Mission 66 Visitor Centers would make the evaluation of the Logan Pass Visitor Center possible at that time. Consultation would continue with the Mission 66 panel to assure that the affect would not be adverse to the inside of the building.

Cumulative Effects

The Alternative 2 Proposed Action to construct a ramp within the visitor center is a minor action which would have negligible cumulative effect to the character of the visitor center as a facility representative of Mission 66

architecture. The proposed action would provide visitor access throughout the building, which was the original intent in the design of construction in 1967. The proposed action is not part of any other planned modifications to the facility. Alternative 1 No Action would have negligible effect.

4.3 Socioeconomic Resources

Park Visitation and Use

Alternative 1- Retain Current Access (No Action)

This alternative would have negligible effect on the current means of access to the Logan Pass Visitor Center, and the upper terrace trailheads. The impact is major for mobility impaired visitors because they would continue to have difficult or no access to the visitor center, information, displays, and view of the Hanging Gardens wildflower meadows. Moderate safety concerns would continue as visitors try to utilize the existing steep ramps.

Alternative 2-Construct Accessible Walkways (Proposed Actions)

Visitors to the Logan Pass Visitor Center would have temporary and moderate disturbance during two seasons of construction by the sight and sound of construction activities such as equipment noise, soil piles, and parking spaces taken up by equipment storage. Congestion from the combination of visitors, vehicles, construction crews and equipment would create temporary, moderate safety concerns. Visitor access to the Visitor Center, upper terrace, and Hidden Lake Trailhead would be maintained during construction. Continuing to provide visitor information and services during construction may require additional staff and other logistical planning for visitor services, protection, and maintenance operations. The construction zone would be separately delineated for safety. Needs for construction vehicle parking, materials storage and equipment proximal to the project may result in minor reduction to visitor parking. There may be a moderate reduction of 4.8 % to 8% in the available floor space within the visitor center for an interior ramp.

This proposal would have major, long term benefits to mobility impaired visitors by providing opportunity for independent and easier access to the Logan Pass Visitor Center. After construction is completed, mobility impaired visitors would be able to better enjoy and appreciate the Logan Pass area, including its Visitor Center, and the park would be more accessible to a wider range of visitors. Interpretive displays, informational materials, and meadow views would be available to people that previously found these activities difficult at Logan Pass.

Cumulative Effects

Construction activities during the visitor use season would contribute moderate, temporary disturbance effect on the quality of visitor experiences. However, these disturbances are temporary and can be minimized by advanced planning and experience from prior construction projects at Logan Pass in 1987 and 1995. There are plans to replace part of the Logan Pass Boardwalk on the trail to Hidden Lake Overlook in late August that would be a temporary inconvenience. Visitors driving on the Going-to-the-Sun Road during the summer may experience brief delays in traffic due to road construction activities between the Loop and Siyeh Bend. There are no other construction projects planned within the Logan Pass area during the time of the proposed project.

Economics

Alternative 1 - Retain Current Access (No Action)

Access to the Glacier Natural History Association bookstore would continue to be difficult for mobility impaired visitors who can not travel on stairs, and this may have a minor effect on gross sales. Some of these visitors would need assistance to purchase educational materials.

Alternative 2 - Construct Accessible Walkways (Proposed Actions)

An accessible walkway constructed in the visitor center would have moderate reduction in the space currently used for bookstore operations. It is difficult to predict what effect the reduction of retail space would have on gross sales, and in turn, Glacier Natural History Association's ability to return significant aid funding back to Glacier National Park for educational purposes. There would be a need for the rearrangement of display shelving units in order to incorporate the probable reduced space from the ramp landing, and provide for adequate space for wheelchair travel. A September/October construction schedule would allow the Glacier Natural History Association to plan accordingly for personnel reduction, inventory purchase and removal, and other budgetary concerns of importance. The Glacier Natural History Association has typically ceased operations at close of business on September 30. An early season (June/July) construction schedule would be unpredictable at best, primarily because of the unknown date of the opening of the Going-to-the-Sun Road each year and the ability to access the Logan Pass Visitor Center for construction.

Cumulative Effects

With advanced planning for construction, and adequate notification to the Glacier Natural History Association regarding the schedule for construction within the visitor center, there would be negligible cumulative effects on economic issues from both the Alternative 2 Proposed Action, and the Alternative 1 No Action.

5.0 LIST OF PREPARERS

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Roger Buck, Landscape Architect, Retired, National Park Service
Flathead National Forest

APPENDIX A: LIST OF PLANT SPECIES

PLANT SPECIES	
Scientific name	Common name
<i>Abies lasiocarpa</i>	subalpine fir
<i>Achillea millefolium</i>	Yarrow
<i>Alnus sinuata</i>	Sitka alder

<i>Anemone drummondii</i>	Drummond's anemone
<i>Antennaria microphylla</i>	rosy pussytoes
<i>Aquilegia flavescens</i>	yellow columbine
<i>Arnica mollis</i>	hairy arnica
<i>Carex</i> spp.	sedge
<i>Epilobium alpinum</i>	alpine willow-herb
<i>Erigeron peregrinus</i>	wandering daisy
<i>Erythronium grandiflorum</i>	glacier-lily
<i>Fragaria virginiana</i>	blueleaved strawberry
<i>Gentiana calycosa</i>	explorer's gentian
<i>Heracleum lanatum</i>	cow-parsnip
<i>Hypericum formosum</i>	western St. John's wort
<i>Luzula hitchcockii</i>	smooth woodrush
<i>Mimulus lewisii</i>	red monkey-flower
<i>Mitella</i> sp.	mitre-wort
<i>Myosotis</i> sp.	forget-me-not
<i>Oxyria digyna</i>	mountain sorrel
<i>Pedicularis groenlandica</i>	elephant's head
<i>Penstemon confertus</i>	yellow beardtongue
<i>Penstemon ellipticus</i>	northern shrubby beardtongue
<i>Phleum alpinum</i>	alpine timothy
<i>Phyllodoce empetriformis</i>	pink mountain-heather
<i>Poa alpina</i>	alpine bluegrass
<i>Polystichum</i> sp.	swordfern
<i>Potentilla diversifolia</i>	diverse-leaved cinquefoil
<i>Potentilla fruticosa</i>	shrubby cinquefoil
<i>Potentilla glandulosa</i>	sticky cinquefoil
<i>Ranunculus</i> sp.	buttercup
<i>Ribes montigenum</i>	alpine prickly currant
<i>Salix arctica</i>	arctic willow
<i>Salix vestita</i>	rock willow
<i>Saxifraga ferruginea</i>	rusty saxifrage
<i>Senecio resedifolius</i>	dwarf butterweed
<i>Senecio triangularis</i>	arrowleaved groundsel
<i>Sibbaldia procumbens</i>	sibbaldia
<i>Valeriana sitchensis</i>	Sitka valerian
<i>Veratrum viride</i>	false hellebore
<i>Xerophyllum tenax</i>	beargrass

APPENDIX B: LIST OF WILDLIFE SPECIES

WILDLIFE SPECIES	
Scientific Name	Common Name
<i>Ursus arctos horribilis</i>	grizzly bear
<i>Canis latrans</i>	coyote
<i>Gulo gulo</i>	wolverine
<i>Martes americana</i>	marten

<i>Marmota caligata</i>	hoary marmot
<i>Spermophilus columbianus</i>	Colombian ground squirrel
<i>Spermophilus lateralis</i>	golden-mantle ground squirrel
<i>Tamiasciurus hudsonicus</i>	red squirrel
<i>Ovis canadensis</i>	bighorn sheep
<i>Oreamnos americanus</i>	mountain goat
<i>Lynx canadensis</i>	lynx
<i>Felis concolor</i>	mountain lion
<i>Ursus americanus</i>	black bear
<i>Canis lupus</i>	gray wolf
<i>Mustela</i> spp.	weasel
<i>Martes pennati</i>	fisher
<i>Ochotona princeps</i>	pika
<i>Lepus americanus</i>	snowshoe hare
<i>Thomomys talpoides</i>	northern pocket gopher
<i>Eutamias minimus</i>	least chipmunk
<i>Phenacomys intermedius</i>	Montane heather vole
<i>Arvicola richardsoni</i>	water vole
<i>Sorex vagrans</i>	Vagrant shrew
<i>Odocoileus hemionus</i>	mule deer
<i>Cervus elaphus</i>	elk
<i>Passerella iliaca</i>	fox sparrow
<i>Zonotrichia leucophrys</i>	white-crowned sparrow
<i>Carduelis pinus</i>	pine siskin
<i>Turdus migratorius</i>	American robin
<i>Lagopus leucurus</i>	white-tailed ptarmigan
<i>Cypseloides niger</i>	black swift
<i>Hirundo rustica</i>	barn swallow
<i>Hirundo pyrrhonota</i>	cliff swallow
<i>Corvus corax</i>	common raven
<i>Nucifraga columbiana</i>	Clark's nutcracker
<i>Catharus guttatus</i>	hermit thrush
<i>Sialia currucoides</i>	mountain bluebird
<i>Myadestes townsendi</i>	Townsend's solitaire
<i>Regulus calendula</i>	ruby-crowned kinglet
<i>Anthus spinoletta</i>	water pipit
<i>Dendroica coronata</i>	yellow-rumped warbler
<i>Oporornis tolmiei</i>	MacGillivray's warbler
<i>Wilsonia pusilla</i>	Wilson's Warbler
<i>Carpodacus cassinii</i>	Cassin's finch
<i>Leucosticte arctoa</i>	rosy finch
<i>Spizella passerina</i>	chipping sparrow
<i>Junco hyemalis</i>	dark-eyed junco
<i>Aquila chrysaetos</i>	golden eagle
<i>Falco mexicanus</i>	prairie falcon
<i>Falco peregrinus</i>	peregrine falcon
<i>Falco rusticolus</i>	gyrfalcon
<i>Dendragapus obscurus</i>	blue grouse
<i>Chordeiles minor</i>	common nighthawk
<i>Colaptes auratus</i>	northern flicker
<i>Perisoreus canadensis</i>	gray jay

<i>Parus gameli</i>	mountain chickadee
<i>Sitta canadensis</i>	red-breasted nuthatch
<i>Cinclus mexicanus</i>	American Dipper
<i>Pinicola enucleator</i>	pine grosbeak
<i>Loxia curvirostris</i>	red crossbill

APPENDIX C: APPLICABLE REGULATORY REQUIREMENTS

Americans with Disabilities Act, 1990 (ADA; PL 101-336): The ADA addresses discrimination against individuals with disabilities in employment, public services, public accommodations, and telecommunications. The ADA extends the principles of Section 504 of the Rehabilitation Act to protect persons with disabilities in all public facilities and programs irrespective of funding source. Accessibility Guidelines were produced in 1991 (ADAAG) that set forth standards for public accommodations

Architectural Barriers Act 1968 (P.L. 90-480): The ABA requires all buildings and facilities built or renovated in whole or in part with Federal funds be accessible to and usable by physically disabled persons. The proposed action

suggests renovation to the pathways and inside of the Logan Pass Visitor Center to make the facility accessible and usable by physically disabled persons.

Rehabilitation Act 1973 (P.L. 93-112): This act requires program accessibility in all services provided with federal dollars. The proposed action suggests revision to the inside of the visitor center to enable people with disabilities to receive the same benefits as those received by other visitors.

National Environmental Policy Act (NEPA) and Regulations of the Council on Environmental Quality: The National Environmental Policy Act applies to major federal actions that may significantly affect the quality of the human environment. This generally includes major construction activities that involve the use of federal lands or facilities, federal funding, or federal authorizations. This Environmental Assessment (EA) is prepared to evaluate potential effects from the proposed alternative actions.

Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.): Section 7 of the Endangered Species Act is designed to ensure that any action authorized, funded, or carried out by a federal agency likely would not jeopardize the continued existence of any endangered or threatened plant or animal species. Although the National Park Service does not believe the proposed action would effect threatened or endangered species, a Biological Assessment will be prepared, and informal consultation pursued with the US Fish and Wildlife Service before completion of the Environmental Assessment.

Executive Order 11988, Floodplain Management: This order requires all federal agencies to avoid the construction of certain types of facilities in 100-year and 500-year floodplains unless no other practical alternatives exist. There are no floodplains within the project area.

Executive Order 11990, Protection of Wetlands: This order requires federal agencies to avoid, where possible, impact to wetlands. There are no wetlands within the project area.

Executive Order 12898, General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations: This order requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. None of the alternatives would adversely affect environmental justice. All populations would be affected equally.

National Historic Preservation Act of 1966, as amended (16U.S.C. 470, ET. Seq.): - Section 106 of the National Historic Preservation Act of 1966 (as amended) requires all federal agencies to consider effects from any federal action on cultural resources eligible for or listed on the National Register of Historic Places (NHRP), prior to initiating such actions. The proposed action may affect known cultural resources eligible for NHRP listing and may be considered an “undertaking” that would require additional review, consultation, and concurrence under Section 106 of the National Historic Preservation Act.

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